

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior listings and versions of claims in this application. Please cancel claims 13-18 and 29-48, without prejudice or disclaimer, and add new claims 49-60, as follows:

1-48. (Canceled).

49. (New) A system for manipulating and thermal cycling a sample well tray, comprising:

a thermal cycling device generally defining a horizontal cross-sectional area and comprising a sample block inside the cross-sectional area for receiving the sample well tray, the sample block comprising a plurality of openings for receiving sample wells of the sample well tray; and

a sample well tray handling apparatus comprising:

a sample well tray holder configured to receive the sample well tray therein;

a rotational actuator configured to rotate the sample well tray holder about a rotational axis; and

an extension arm extending from the rotational actuator and being connected to the sample well tray holder,

wherein the sample well tray handling apparatus is configured to move the sample well tray from a first location outside the cross-sectional area to a

second location inside the cross-sectional area and then later remove the sample well tray from the second location to the first location.

50. (New) The system of claim 49, wherein, at the first location, the sample well tray is accessible by a robot that is not part of the thermal cycling device.
51. (New) The system of claim 49, further comprising a detection unit configured to provide a real-time detection capability during thermal cycling at the second location, wherein operation of the sample well tray handling apparatus does not interfere with the detection unit.
52. (New) The system of claim 49, wherein the rotational axis is located inside the cross-sectional area of the thermal cycling device.
53. (New) The system of claim 49, wherein the sample well tray handling apparatus further comprises a biasing member configured to urge the sample well tray and sample well tray holder in a direction away from the sample block of the thermal cycling device.
54. (New) The system of claim 53, wherein the biasing member comprises a spring.

55. (New) The system of claim 49, further comprising a robot with a robotic arm configured to transport the sample well tray from a third location outside the cross-sectional area of the thermal cycling device to the first location.
56. (New) The system of claim 55, wherein the robotic arm is rotatable between the third location and the first location with respect to a second rotational axis.
57. (New) The system of claim 49, wherein the thermal cycling device includes only one sample block for receiving the sample well tray.
58. (New) The system of claim 49, further comprising a sensor for sensing a rotational position of the sample well tray holder.
59. (New) The system of claim 49, wherein the rotational angle between the first position and the second position with respect to the rotational axis is approximately 90 degrees.
60. (New) The system of claim 49, further comprising a cover configured to press the sample well tray against the sample block when the sample well tray is moved to the second position.